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☞ *See Advertisement on last page.*

THE GENTLEMAN'S WIFE.

Don't argue to me about modest simplicity!
Of grace unadorned—not a truth can you tell.
None else should you wed, if you long for felicity,
Than a lady of fashion, a flirt and a belle.
They may boast as they please of the Venus of Italy,
In figure so faultless, the model of yore;
But in form far exceed—they must own to it bitterly—
Our maids, dressed in petticoats nearly a score.

How cheering the thought to a man of gentility,
That in all polite knowledge his wife is expert!
And how would it shock every nice sensibility,
If he thought she could whitewash, or mend an old shirt!
For surely no husband who loves with intensity
Would allow his hearts idol to clean off the chairs—
To clear the piano from dust's gathering density
To sweep out the parlor, or dust down the stairs.

Nay! sooner by far, without nonsense or vanity,
Would each man of feeling a sacrifice make,
And perish himself of a lingering inanity,
Than marry a girl who could cook a beefsteak.
What! degrade his dear wife in the scale of creation,
To the level of scullions who work for their pay?
Let his ever prized dear make the kitchen her station,
And toil like a cook to get dinner each day?

Oh! perish the thought of such shameless vulgarity!
Let fashion and sentiment still have their sway,
And our belles with low house-work have no familiarity,
But shine in accomplishments *tres distingue*.
No! the wife for a gentleman loving politely,
With beauty alluring should fascinate well;
And none can bewitch him with graces more brightly,
Than a lady of fashion, a flirt, and a belle.

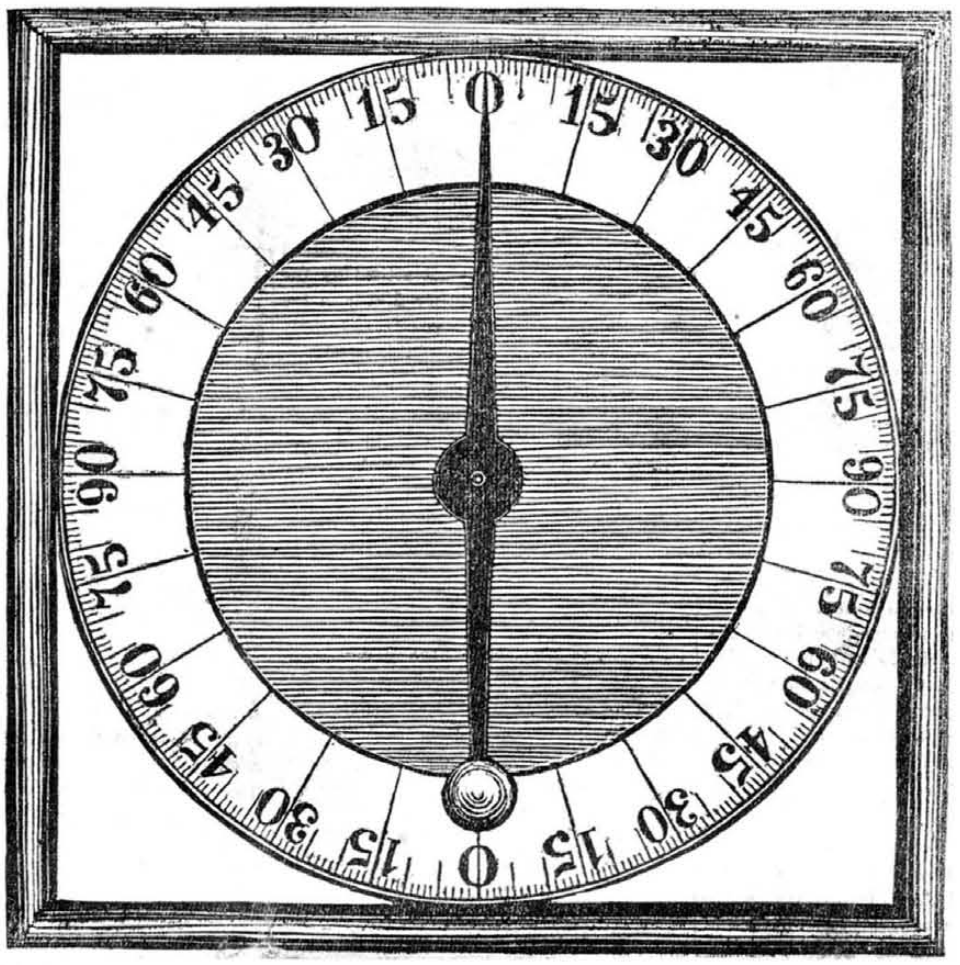
The Charcoal Men.

With faces dark as ebon night,
They tread the streets from morning's light
'Till the last rays of jocund day,
In night's dim taper dies away,
And naught you ever hear them say,
Except "Charcoal."

"Charcoal! Charcoal!" from day to day,
At every corner is the lay;
In winter's snow or summer's heat,
Smear'd with black they throng the street,
And every now and then you greet,
"Charcoal, Charcoal."

A girl belonging to Wrentham, Mass. has been sentenced to sixty days in the house of correction, for pretending to be a witch.

PLUMB AND LEVEL INDICATOR.



Notwithstanding the insertion in a former number of an engraving similar to the one here presented, we, by special request, and by the consideration that the utility of the article has been tested, and some of them are now on sale, are induced to present again the subject to the attention of our readers. The utility of the *Indicator* far exceeds the expectations of the inventor, being found exceedingly convenient not only for masons, carpenters, ship-builders, but for topograpical engineers, surveyors of land, road builders and farmers. It will be understood that the proper position of the instrument is vertical, and that the weight of the ball will keep the index in a perpendicular position; so that either the bottom or the side of the frame being placed against a horizontal, vertical, or oblique surface, the index will readily indicate whatever variation there may be, from a perpendicular or a horizontal line. They answer the ready purpose of a square, plumb or level, and by readily showing the level, or obliquity of braces, and the exact variation of vertical or horizontal surfaces, from horizontal or perpendicular lines (which neither the spirit level nor the plumb-line will do) it may be considered among the indispensables. In describing specific angles, octagons, hexagons, &c. for timbers in carpenter and mill-work, they come to the point at once, and save three-fourths of the time ordinarily expended in laying out such work: and if a land holder has a mill stream, on which he would ascertain the quantity of *fall* in a given distance; or if a farmer would ascertain the distance and depth to which he must cut a drain; the elevation which he may obtain from an aqueduct; or the direction in which a standing tree is inclined, he will find the *indicator* ever ready to inform him. Besdies the utility, it embraces a considerable share of elegance,—consisting of a neat mahogany frame 9 inches square, and glass, encasing a lithographic dial with an interesting picture (not represented in this cut) in the centre; and the movement of the index is so free, that a variation of one fourth of a degree is indicated. Measures are in progress for securing a patent. For sale at this office,—price one dollar single.

Cataract Cave, Scoharie, N. Y.

The Cataract Cave was first opened about two years since, by a young man of the name of Howe. The opening when first noticed was but little larger than a man's arm; but after arduous labor for some hours, he succeeded in making his way into a passage where he could stand erect; and continuing on, numerous chambers were discovered of great extent and beauty. The main avenue has since been examined to the distance of seven miles. One of the innermost rooms, (six miles from the entrance,) which has been named the Rotunda, is thirty feet in diameter, and is said to be 500 feet in height.

Beyond this there was another rotunda, 12 feet in diameter, and several hundred feet in heighth. The chambers are splendidly arrayed in stalactites and stalaginites, many of which are of gigantic dimensions. Thousands of bat's bones covered the bottom is some places, and many were embedded in stalagmite. About a mile from the entrance, and half a mile from the main avenue, there is a fall of water of great magnitude, whose roaring in these subterraneous recesses has been compared to Niagara; the cave is named from this fall, Cataract Cave. The rocks in which it occurs is limestone.—*Silliman's Journal.*

An old story new-vamped.

Two Irishmen, on landing in this country and setting down to their first dinner on shore, found on the table a dish of prepared mustard, which neither of them had ever happened to meet before. One of them took a spoonful at a venture, which quickly brought a deluge of tears over his face. "What are you crying for?" asked his companion. "I was crying at the recollection of my poor father, who was hung twenty years ago." The dinner proceeded, and soon the other made a dip into the mustard, with a result similar to the former. "What are you crying for?" was the grave enquiry of his comrade. "I am crying because you were not hung when your father was."

Three Peeks of Snakes!

At Birmingham, Conn. on Tuesday of last week, some young men, while hunting in the woods, discovered a den of crawling reptiles, counting seventy-six in number, and measuring three pecks, *dry measure*. They were too much chilled to be harmful, and were put into a box to be sent to "this market."

A Cruel Pun.

Among those who were killed or wounded at the storming of Monterey are said to be 48 by the name of Williams, whence it has been said that the Mexicans have been remarkably prompt in settling *Taylor's Bills*.

A LIST OF PATENTS

Issued from the 3d of December to the 5th of December, 1846, inclusive.

To Peter H. Watson, of Rockford, Illinois, for improvement in Machinery for cutting Screws. Dec. 3, 1846.

To Philip Estes, of Adrian, Michigan, for improvement in machinery for chamfering, crozing, and howeling casks. Dec. 3, 1846.

To James Rorobaugh, of Lunoy's Creek, Virginia, for improvement in Hill Side Plow. Dec. 3, 1846.

To Samuel & George I. Conrad, of Berlin, Penn. for improvement in Cooking Stove.—Dec. 3, 1846.

To Charles Randall, of Palmyra, Georgia, for improvement in Harpoons, Dec 3, 1846.

To Melchior Bretzger, Pittsburg, Penn. for improvement in looms for weaving Wire Gauze. Dec. 5, 1846.

To Christian Frederick Schoenbein of Basle Switzerland, for improvement in prepartion of Cotton, Wool, and other substances, as substitutes for Gunpowder (having assigned his right to Wm. H. Robertson, of the United States, now consul at Bremen.) Date of the English Patent Oct. 8th, 1846. Patented in United States, Dec. 5th, 1846.

To William Vine, of New-York, for improvement in machinery for polishing Knives &c. Dec. 5, 1846.

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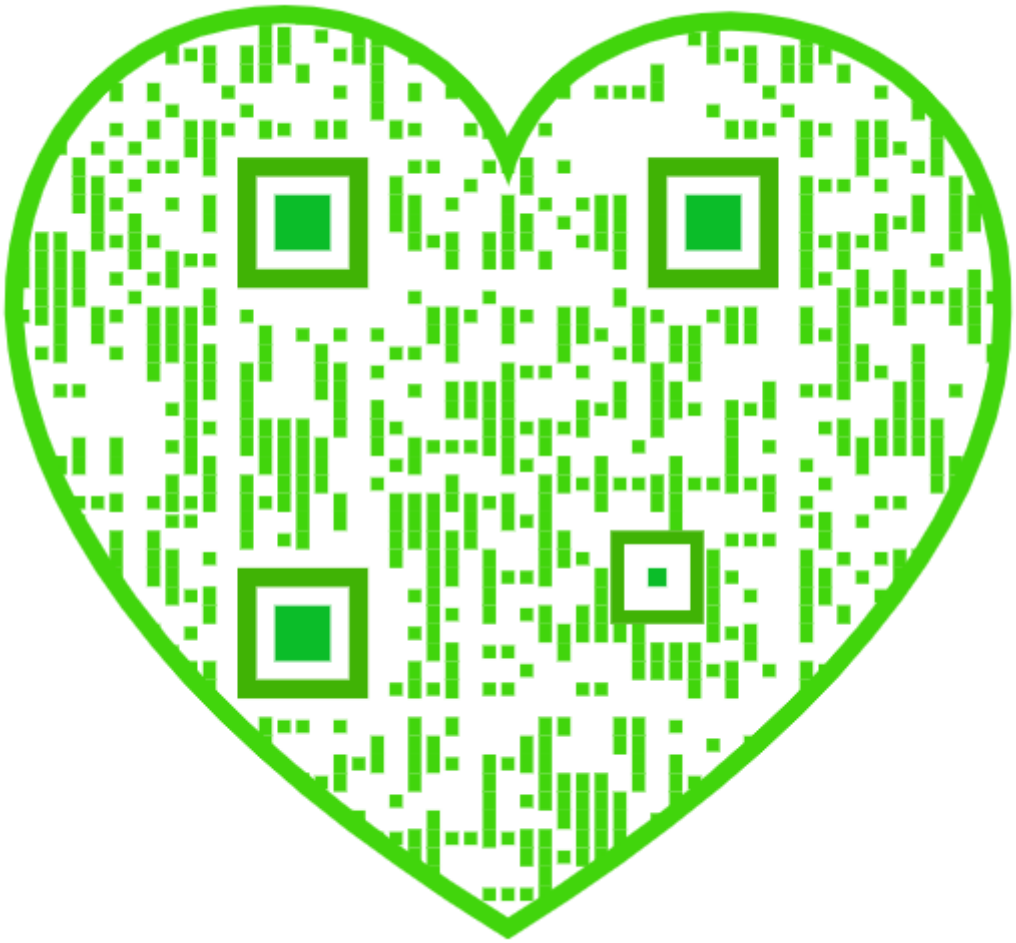

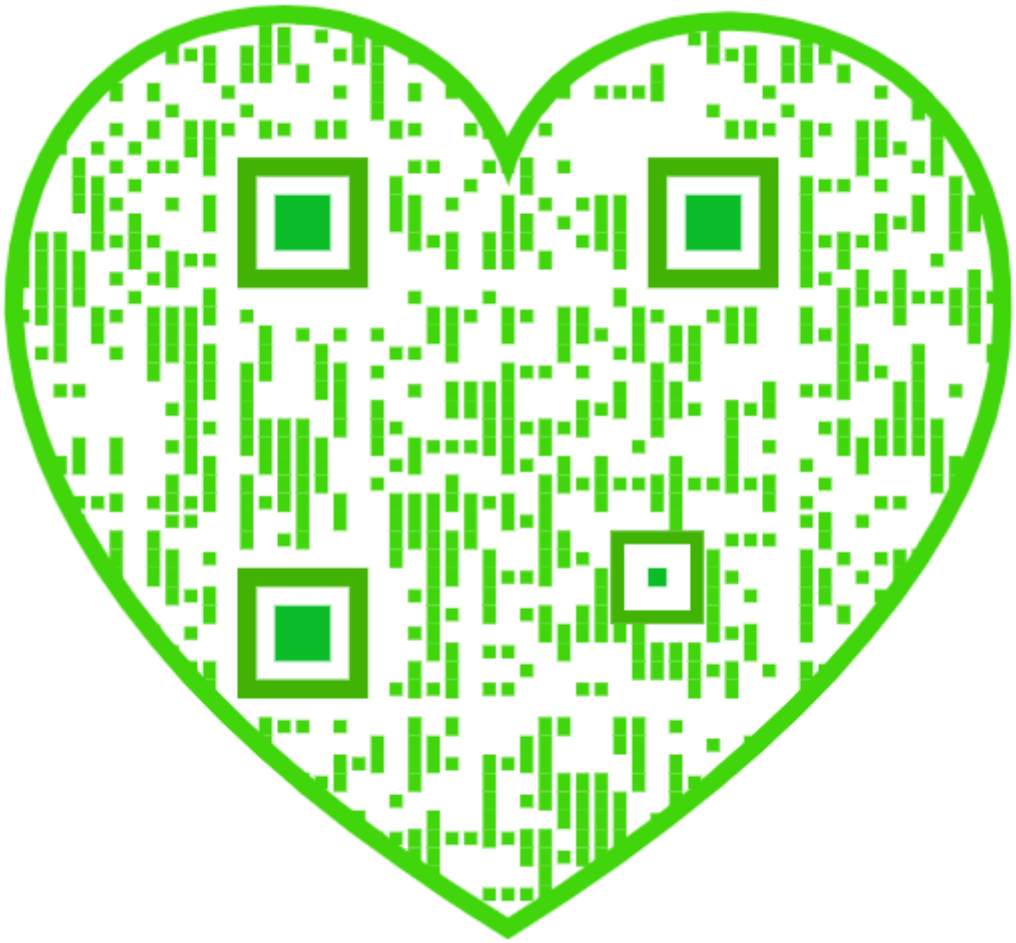

War Movements.

It is stated by a Washington letter writer, that the greatest activity prevails at this time in our army. General Wool is supposed to have reached Monterey with 2500 men. The report is confirmed that General Wool had taken possession of Monclova; the Governor and many of the citizens having formed an escort, on hearing of his approach, and met him four or five miles from the city and welcomed him as a friend. The country through which he had passed, is highly spoken of. General Kearney had taken possession of the city of Chihuahua without resistance. Gen. Worth has been sent to take possession of Saltillo, that city having been evacuated by the Mexican troops. Orders have been sent to General Taylor to garrison the places already taken, and repair with the main body of the army to Point Isabel, whence they will be taken by Commodore Perry's squadron, to Tampico, where they will meet Gen. Scott and the new regiments ordered to that point. Santa Anna is said to have left San Luis Potosi and returned to Mexico. Further reports from the seat of War may be looked for with increased interest.

Sleighing in Maine.

The people of Maine experienced a heavy snow storm prior to the 26ult (Thanksgiving in the rest of the world) notwithstanding their prudence in deferring Thanksgiving. We should not wonder if their sleighing was spoilt by a thaw before their late appointed day arrived, after all.

The Portland Depo t.

The new Railroad Company have secured about six acres of land on Fore street, embracing the site of old Fort Burrows, (that's the place where we played soldier) for a depot and iron rail manufacturing establishment. It is a first rate location.

Iron Mountain.

We understand, says the St. Louis American, that the new furnace at the iron mountain is again in blast. They are now turning about three tons of cast iron per day, and expect soon to turn out ten tons per day. The success of this enterprise may give a new impulse to the iron business in Missouri.

Is it good to be angry?

It is pretty considerably well known that rum often if not generally, produces irritability; and we have just been reading of a man, who under its influence, got very angry, dashed his jug and its contents against the wall, and declared he would never drink another drop—and he *kept his word*.

Washington Monument.

William Kennedy is exhibiting at Philadelphia, a design for a Monument to Washington to be erected in that city. The design is a tall column four hundred feet high, with an ascent inside by a winding stair case.

Very Negative.

Caleb says "he don't see no reason to doubt the incorrectness of the contradiction of M. M's denial of the erroneous statement that the motion of the triangular spindle was non-rotary." What is Caleb's opinion of the said motion?

Great Paper Ware-House Burned.

At Chicago, Ill., on the morning of the 25th ult, during a terrible gale of wind, a fire broke out in Pardee's Warehouse. which threatened half the town. The loss will amount to between $30,000, and $40,000.

How they do things in Tennessee.

A man in Athens, Tenn., having paid his addresses to two sisters, married one, and recently run away with the other. The Father in-law pursued and shot the fellow and returned, taking both daughters home.

Emigration.

The Poughkeepsie Eagle says that 150,000 emigrants have been landed at the port of New-York since the 1st of March last. Well, let them come; there's room enough out West.

Americans Welcome in Mexico.

It is now asserted by letter writers from Monterey, that many of the wealthy families in Mexico are desirous that the Americans should retain possession of the country, and establish a permanent government, which would rout the bands of many robbers that infest the different neighborhoods, plundering the inhabitants at every opportunity. Some of the largest and wealthiest families have sent word to General Taylor that they will furnish him with flour, corn or beef, regardless of the threats of the Mexican commandant.

Egypt and America.

Mr. Glidden, in a recent lecture in Philadelphia, exhibited to his audience two earthen jars, one of which had been dug up from an ancient mound in our western country, and the other taken from an ancient tomb in Egypt. They were precisely of the same pattern.—We are confirmed in the long entertained opinion that America was first settled by the crews of some Roman or other fleet trom the Mediterranean, which had been providentially driven on the Western coast of this continent.

A Candle-making Candlestick.

We have seen at 117 Fulton st. a new invention called "Drummond's Candle Maker," which consists of a brass or tin candlestick with a reservoir of capacity to hold half a pound of tallow and a quantity of wicking, and so constructed that a new candle can be moulded and drawn up as fast as it is consumed at the top; thus constituting a sort of endless candle.

The Mysterious Stranger.

A gentleman evidently from Mexico, has been for a few days at Washington, but much secluded: but having been seen conversing with Secretaries Walker and Buchanan, it is conjecturcd, and even reported by the letter writers, that he is on a mission from Northern Mexico, to make important negotiations with our Government, independent of that of Mexico:—cession on one part, and protection, on the other.

Is Your Name Chase?

The Yarmouth Register says that an estate worth £52,000,000 sterling, which had been for years litigated in the High Court of Chancery in England, has recently been adjudged to the heirs of four brothers by the name of Chase, three of whom came to this country some two hundred years ago. One of them—William,—settled in Yarmouth, Mass. and it said that most of his descendants reside within a few miles of that town William's share is computed at $65,000,000.

Inproved Boot-Jack.

A countryman with an enormous pair of feet, and boots to match, appeared in the bar-room of a village tavern and enquired for a boot-jack. The bar-keeper assured him there was no boot-jack in the house large enough to accommodate him, and advised him to walk back to the *fork of the roads* and pull them off there.

General Worth.

The hero of Monterey, was a merchant's clerk in Hudson, on the North River, 35 years ago. He entered the army as a private, at the opening of the war of 1812, distinguished himself at Lundy's Lane, where he was wounded, and at the suggestion of Gen. Scott promoted.

Balloon.

On the 22d ult., Mr. Lehmann ascended in a balloon from Algiers, opposite New-Orleans. The ascent was quite handsome, but a stiff North-Easter carried him out of sight and *we* have not heard of him since

They have had a three days town meeting at Provincetown, Mass. during which time there were *forty* unsuccessful ballotings for representatives.

The price for a license to sell intoxicating liquors, in De Soto Co., Miss., has lately been raised to $500.

A Catholic priest has been imprisoned at Camargo on the charge of using his influence to induce Amerscan soldiers to desert.

A person who had been listening to a very dull address, remarked, that every thing "went off well, especially the audience."

RAIL ROAD INTELLIGENCE.

New York and New-Haven Rail Road.

We are gratified to perceive that capitalists are waking up to the importance of this road, of which we have so often expressed the opinion, for years past, that it must eventually become a part of *the principal* railroad in New England. We learn that about $2,000,000 of the stock has been taken up already, and that the road is to be completed within one year from the 1st of January next.

Hartford and Springfield Railway.

A large force is employed in rebuilding the bridge over the Connecticut river, at Windsor locks; and the piers, which were uninjured by the storm, are already surmounted with the greater portion of the frame work.

P. S. Since the foregoing was written, we have been informed that the bridge is completed, and the cars pass over it as formerly.

The Pennsylvania Railroad.

The subscription by the city of Philadelphia towards the Pennsylvania Railroad to Pittsburg, is for $1,500;000, and is made on condition that an equal sum shall be raised by private subscription. Of this latter sum nearly a million has been subscribed, and the Philadelphia North American says it is ascertained that the remaining half million will be obtained without difficulty.

Central Railroad in Michigan.

The Detroit Advertiser states that an immense business has been accomplished on this road for some time past, and mentions an instance within a few days in which flour and wheat equal to five thousand barrels of flour, were brought to that city by the railroad in a single day.

Utica and Schenectady Railroad.

Two companies in New-Jersey have contracted to furnish the Utica and Schenectady railroad association with 6,600 tons of new rails, to weigh 65 lbs. to the yard. The contract is sufficient for the whole road.

Erie Railroad.

Another section of this road, from Middletown to Otisville, has been lately opened for travel, and another section of 11 miles is to be finished early next season, by which time it is expected that contracts will be made for grading 130 miles more.

Sullivan Railroad.

A charter has been procured for the purpose of constructing the Sullivan road from the Cheshire railroad at Bellow's Falls on the New-Hampshire side to the Central railroad at or near Windsor Vt. a distance of about 27 miles. The route is reported to be exceedingly favorable, and the grading is expected to be soon put under contract.

Rutland Vt. Railroad.

The friends of this road have been active in their exertions for its advancement, and have announced that the stock has all been subscribed for, and that the road will soon be commenced.

Railroads in Germany.

Germany has now open to public traffic 37 miles of railroad extending a length of 469 1-2 geographical miles. There are at work on those lines 600 locomotive engines, of which 267 are of English construction, 39 American, 46 Belgian,, 16 French, and the remainder German.

"Ha, there you are, at your idol again." said a lady to Rev. Dr. Isaac, on discovering him smoking a cigar. "Yes, madam, burning it," was the doctor's cool reply.

A farmer near Milwaukie, Wis. has raised *three hundred and sixty* bushels of wheat on eight and a half acres of land. 42 1-2 bushels to the acre.

Calloway Hunt, indicted for murder, has been tried at Mobile, and fined by the jury $100, and recommended to six month's imprisonment.

The opinion is rapidly gaining ground in Canada that all the North American British Provinces will soon be united under a Viceroy instead of a Governor General.

Beach nuts are so plentiful in Maine as to be sold for three cents a quart. So says the Norway Advertiser.

Smith the razor strop man is in this city, and has "a few more left." If our readers do not hear more from him soon, others will.

LATE FROM EUROPE.

The Steamship Caledonia arrived at Boston on the morning of Saturday last, 16 days from Liverpool. The news by this arrival is of ordinary interest, but nothing exciting.—Money is plenty; the rate of interest has been reduced to 3 per cent, and bullion was being extensively exported. Flour was selling at about $8. American soda biscuit is in brisk demand.

The damage occasioned by the late inundations in France is immense. It is estimated to require $13,000,000 to repair and replace the bridges destroyed.

The Duke of Nassua has advanced 200,000 florins to aid German emigrants in going to Texas. Eight hundred were at Bremen, waiting for a passage to the United States.

Dr. Hebla, of Vienna, has prepared tow which is more powertul in its explosion than gun cotton.

Queen Christina, of Spain, is about to visit, and make a temporaty residence in France.

An English newspaper has been established at Rome, under the title of the *Roman Advertiser*. The policy of the Pope appears to be to conciliate protestants by liberal measures—for the present.

A company has been formed in Belgium, for uniting the Pacific and Atlantic oceans at the lake of Nicaragua. There is no great risk however, in predicting that no enterprise of this kind will ever be carried through.

TO CORRESPONDENTS.

"P. M. of Albany."—We have on hand, and nearly finished, a machine for driving machinery by galvanic power:—will be in operation next week. Several machines for this purphse have been invented, but we have no certain knowledge that any of them have been patented.

"W. Q. of C."—We can send one or more plumb and level indicators to Cleaveland by express if required. The fence making machinery has been delayed on account of a press of other new inventions, of which we have several engravings on hand. We may find room for it soon.

"T, D. S."—Your answer to the problem was nearly correct but not received in season. Your theory about the differences of momentum produced by the earth's motion on its axis, would be deranged by the motion of the earth in its orbit.

"Subscriber."—The curve in a screw thread is a *spiral curve*: but no metal plate can be cut into a shape to conform to it without extension of the metal.

"E. C. of P."—The quaint dissertation on nothing in particular, sent by you is very ingenious, but not exactly within our range.

"H. C. C."—Ascensions by steam power, with either wings or spirals, without hydrogen is impracticable. The kind of shells you mention, have been proposed by several different persons, but have not been adopted by Government.

"S. E."—Mr. A French, of this city is the inventor of the machine of which you enquire, but the proprietors of the patent will not sell them,—preferring a monopoly in the business.

"D. D. D."—We have not yet obtained the intelligence you require, but shall probably inform you next week.

"L. A."—So much depends on various circumstances connected with the construction and relative motion of different kind of water wheels, that their powers are not reduceable to definite scales, even where the quantity and fall of water is given. We can readily give the amount of the available power of water, having the quantity and fall given, but neither undershot nor re-action wheels usually work more than one half of this available power.

Tne Mexican force ordered on Chihuahua, to cut off Gen. Wool has been remanded and ordered to San Luis.

Miss Nancy Hayes of Louisville, Ky.. has recovered $6000. in a suite for 'breach of promise.' 'O, Barney leave the girls alone.'

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From the Journal of the Franklin Institute.

On using Steam expansively.

Under a similar title, in the Journal for September, Mr. Erskine Hazard has promulgated, very erroneous doctrines on various subjects some of which I am desirous of correcting.

There is no lack of tables, showing the ratio of effect produced by steam at full stroke, and cut off at any part of it; in fact, that is shown by every table of hyperbolic logarithms; nothing more being necessary than to find the logarithm corresponding with the number of times the space, occupied by the full steam, is contained in that occupied by the same when expanded: Thus, if the space into which the full is admitted be 1, and that into which it is expanded be 2, it is said to be cut off at half stroke, and, the effect or gain produced by the expansion, is represented by the hyperbolic logarithm of 2, viz. .6931 to which 1 must be added, making the total effect 1.6931 and this being divided by the space into which the steam is expanded, viz. 2, gives the average effect throughout the whole stroke of the piston, viz. 8465 as shown by Mr. H. By this table also it appears, that the same quantity of steam is nearly 18 times as effective, when used expansively and cut off at 1-100 part of the stroke, as when used at the full stroke.

And now let me refer to page 194, where Mr. H. says that "steam at 80 lbs. pressure, cut off at 1-100 of the stroke, by the table will give an average pressure of 10 lbs. to the whole cylinder, and, by adding the vacuum and air pump, 10 lbs. more may be readily obtained."

Now omitting any remark, further than noticing, en passant, the oddness of the expression contained in the latter part of the sentence, it would appear that Mr. H. supposes that steam may be worked to almost any extent expansively without a condenser; let me tell him, however, that in this he is entirely mistaken, and that instead of such an engine giving "a power equal to two of Boulton and Watt's, of the same size, worked with atmospheric steam," it would rather require them to make it work at all; the pressure of the steam being already 5 lbs. under the atmosphere, according to his own statement. If the 180 lbs. is so much above the atmosphere, that makes but 195 lbs. altogether, and the average pressure throughout the whole stroke, would not even then be 11 lbs.—"adding the air pump."

Hence steam cannot be used to advantage with any great extent of expansion without a condenser, for, steam at 75 lbs. above the atmosphere, cut off at 1-6 of the stroke, has not power enough at the end of it, to expel the eduction steam through the valve, and the same would occur with steam at 165 lbs. if cut off at 1-10 of the stroke.

In short, either with or without a condenser, the steam must never be expanded so far as to be unable to overcome the resistance opposed to it, which, practically, must include the element of friction.

To illustrate this part of a subject in a popular manner, with sufficient accuracy for practical use and easy of remembrance as an empirical rule where tables are not accessible, we may suppose 10 steam cylinders, all of the same capacity, and calling the whole 10=10, of course 1=1, we will use one of them only at full steam, calling the effect produced =1: Now, all that can be made of that steam after it has produced that effect, is clear gain, let us therefore pass it into the second cylinder, and take the pressure at the centre as the average pressure throughout, which although incorrect is sufficient for our present purpose, this pressure will be 1 at the commencement of its being let in, and .5 at the end, but the point at which we propose to take the pressure at, is, the centre between those two, where the steam has expanded to one and a half times, therefore $.666 = \frac{1}{1.5}$ is the gain effected by using the second cylinder; if we go on and use a third we have $4 = \frac{1}{2.5}$ as the gain by using that only, making the whole gain = 1.066 = .666 + 4 and the whole effect 2.066 = 1 + .666. + 4, and so we may proceed, until we attain to those practical limits, beyond which it is a waste of power to proceed.—When expanded 9 times, *i. e.* filling the 10 cylinders, the average pressure in the last is little more than 1-10 that of the full steam, and the whole effect is 3.3026 by the table produced by 1 of full steam.

I will notice another error of Mr. H.—and I have done; it is, that "double pressure should contain a double quantity of water"—He is led into this error by what he calls, but erroneously, a law of Dalton's, "that steam obeys the same law as the gases," &c., and no doubt it does under the same circumstances; place steam, in point of temperature above, and of pressure below that of condensation, and out of contact with the liquid which forms it, and the law is correct. Boyle and M. de Sassure have proved that the absorption of water by gaseous bodies is directly as the pressure so long as the temperature is the same, but when that varies, we must resort to a law discovered by Gay Lussac, Dulong and Petit, who have shown that gaseous bodies expand 1-480 for each degree above 32 F. Now 100 cubic inches of gaseous vapor at 32 will weigh .13716 grs. and its elasticity will be .2 in. mercury, but if we increase the heat, we increase the elasticity also, and out of contact with water an increase of 180 degrees of the former will cause the latter to become .275 in. at 212 degrees, and as the elasticity and density of steam are in the same proportion so long as the temperature is the same, we have .275 : 30 :: .13716 : 14.9629 = the grs. of water in 100 cubic in. of steam at 212 degrees, and 30 inches or 1 atmospheric pressure.

In calculating the following table, I have adopted the temperature, in accordance with the experiments of Dulong, Arago, and others of the Parisian Academy of Science, and the Rule 1. Multiply the pressure in inches of Mercury by 329.184 and divide by the temperature plus, 448 F., and the answer will be the grains of water contained in 109 cubic inches of steam.

Temperature.	Pressure.		Weight of 100 in. of steam.
F	in Atmospheres.	in Inches of Mercury.	In Grains.
212°	1	30	14.9629
250.52	2	60	28.2755
275.18	3	90	40.9670
293.72	4	120	53.2574

Thus the increment of temperature, for each increasing atmosphere of pressure, decreases until at 24 At. only 3.78 degrees additional temperature will be necessary to reduce the pressure to 25 At.

As an approximate rule, to find the temperature at which the pressure of steam will be doubled.

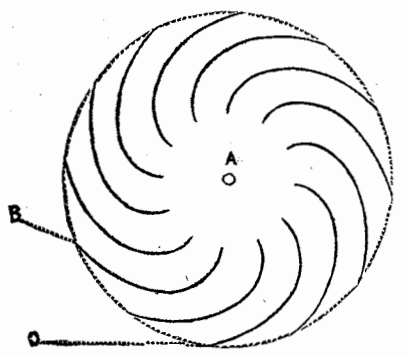
Rule 2. Multiply the temperature by 1.179 and the answer is the temperature at which the pressure will be doubled, nearly.

THOMAS PROSSER, C. E.

An Infidel's Death Bed.

Some years ago, an individual well known and highly respected in the religious world, narrated in my hearing the following incident. In early life, while with a college companion, he was making a tour on the continent, at Paris his friend was seized with an alarming illness. A physician of great celebrity was speedily summoned who stated that the case was a critical one, and that much would depend on a minute attention to his directions.—As there was no one at hand upon whom they could place much relianance, he was requested to recommend some confidential and experienced nurse. He mentioned one, but added, "You may think yourself happy indeed should you be able to secure her services; for she is so much in request in the higher circles here, that there is little chance of finding her disengaged." The narrator at once ordered his carriage, went to her residence, and much to his satisfaction found her at home.—He briefly stated his errand, and requested her immediate attendance. "But before I consent to accompany you, permit me, sir,' said she "to ask you a single question. Is your friend a christian?" "Yes,' he replied, "indeed he is—a christian in the best and highest sense of the term, and who lives in fear of God. But I should like to know your reason for such inquiry?" "Sir," she answered "I was the nurse that attended Voltaire in his last illness, and for all the wealth of Europe I would not see another infidel die."—*Ford's Damascus.*

Curved-float, Re-action Waterwheel.



EXPLANATION.—In this engraving is represented a vertical and sectional view, showsng the interior only of this wheel, which is horizontal in its position and motion. It is one of the most simple and cheap plans for a submerged water-wheel, (or horizontal wind-wheel,) and one of the most powerful that has been introduced,—consisting merely of two plane disks, between which are arranged a series of iron plate floats, curved in such a manner that while the outward ends thereof have an angle of only 25 degrees with the periphery, the centreward ends conform to the radius of the wheel. It is mounted on a small vertical shaft A, and the water when forced upon the wheel from a bulk-head, is conducted from the shute B, C, and after impinging upon the floats in its passage to the centre, is forced to repeat its action thereon in escaping from the wheel. When operated by the open current of a river, (or by wind) no shute or flume is required. The ordinary size for a head-and-fall mill, is three or four feet in diameter, and one foot deep: for a river current or wind-wheel, it may be from 10 to 40 feet in diameter, and 3 to 12 feet deep. This being the plan that was sometime since spoken of as a wind wheel, those who have made enquiries on the subject, will find their answer herein. Operating models may be seen at this office.

Attachment to the World.

Men who are afflicted all the way from the cradle to the grave, will still hope for better things in this world. The world appears under a false color to such; although they meet with trials and troubles—though sickness and death surround them—though disappointment has lurked in every sweet,—still, they hope to crush the canker worm, and sip unalloyed bliss from their cup of happiness in the distant future. They look upon the things of the world as being pleasant and desirable, and although their attachments never bring the expected enjoyments, still, nothing discouraged, they press on, having new objects in pursuit, and feasting on new anticipations. And thus life passes as it were in a state of charm.—Some there are, and have been, all the way, who become partially awake to the evils existing in society, and they, immediately go to work and strike out a way of reform. We could name multitudes of such, who have toiled and labored, and finally *dreamed* that the world would be much wiser and better, for their having lived. But they are gone, and the world hardly knows that such persons advocating designs, which they thought big with the public good, were ever upon the theatre of action! And there are many societies and organizations now in existence, whose avowed purpose is to render happier the human family. Christian communities are not alone in this work. Infidel France has during the few past years produced many pioneers in the work of reformation. Of this class was Fourier, who strange to tell, has many ad herents in this country—this land of Bibles! One reformer will mark out one plan, as the one the most productive of good, another, will select its opposite; and so on, but the world is never the better; wicked men and seducers not only remain untouched, but according to prophecy, they wax worse and worse. There are the same distinctions in society—the rich and the poor are still among us—affluence and poverty still look on one another—hypocrisy and hatred still rankle in the human breast. The efforts made by christian men, philanthropists and good men undoubtedly they are, seem for awhile to bid fair to revolutionise society entirely, but the popular tide soon sets in, and the mass becomes as before. How many have dreamed of the happy days of millenial glory, when the world would be so much improved that sin would not be found in it. But alas! these dreams are all illusory! It is in vain that man attempts to make a paradise of this corrupt earth! The curse is upon it, and all nature groans beneath it, and man likewise, who has become enlightened by the gospel, groans within himself for the day of redemption. It is utterly impossible for him to be satisfied with this state of death and corruption, he must of necessity be a pilgrim and a stranger—it is not his home—death reigns, and the groans and sighs of the dying are upon every breeze!—The mass float down the tide of time regardless of little, but present enjoyment, and present gratification. Tell them of a world pure and holy, such as is promised to the just; and it fails to affect them, it meets with no response from them; their treasures are on the earth, and though moths and rust have often corrupted, yet they are putting forth all their efforts still, and hope to preserve them secure. Alas, for the folly of man! Strange that he will pursue phantoms all the way from youth to grey hairs, from the cradle to the grave!—*Selected.*

A Leaf from the Life of a Criminal.

On Saturday, Constable Clapp arrested in Providence, and brought to this city, an old offender, named Jesse Rhoades, on suspicion of stealing a valuable Brussels carpet from the house of Mr. G. G. Hubbard, upon the Mill-Dam, sometime since. He was examined in the Police Court to-day. The history of this individual, so far as it has come to the knowledge of the Police, is a forcible illustration of the old saying, that "honesty is the best policy." Rhoades' first offence was committed when he was but 19 years old. A robbery took place at the Commercial Coffee House.—Mr. Longley, the landlord, had $600 taken from a desk. Suspicion fell upon Rhoades, who then worked at a piano forte manufactory in Washington street, but was previously employed as a waiter by Mr. Longley. A warrant was procured by Constable Clapp, and Rhoades was searched, but without finding any of the stolen property in his possession; still, many thought him guilty of the robbery, and in a few weeks he was suddenly arrested and re-searched, when eight pistareens (a large number of which coin were among the money taken) were found upon him. He was then committed to jail, search made at his place of business, and nearly the whole of the stolen money found. For this offence, he was sent to the State Prison for four years from the 10th of June, 1836. His next appearance as a criminal was at Providence in 1840, but a very short time after his term of imprisonment had expired. He was in the employ of a mechanic in that city. One hot day his master came in, took off his coat and hung it up in the shop, and was soon called away. Rhoades knew that he carried his wallet in his coat, and that it generally contained considerable money; he took the wallet, and had hardly time to secrete it before his master returned with a friend. Rhoades fearing that he might miss his wallet, made an excuse to go out in his shirt-sleeves, and fled. The loss was soon discovered, and Rhoades not making his appearance, he was suspected, traced to this city and arrested the same night in Richmond st. He was sent to the State Prison in Providence for two years. Soon after his release from this prison, he was engaged by a butter merchant of this city to take charge of his store a portion of the time. It was not long before tubs of butter began to be missed, and information was given to Constable Clapp. After considerable search it was discovered that Rhoades had carried the butter to an auction store, and sold it on his own account. He was arrested, his residence searched, and something like a cart-load of stolen property found, consisting of brushes, books, boots, and all manner of fancy articles. For this he was sent to the State Prison for three years as a common and notorious thief, and also to one month additional, as a second comer. His sentence expired last March. He was convicted at the age of 19; he is now 29—a period of ten years, nine years and one month of which he has spent in State Prisons, and a portion of the remainder in jails awaiting trial.

We understand that at the last session of the Legislature Rhoads had his name changed to Jesse R. Mayo.—*Boston Traveller.*

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NEW INVENTIONS.

Preparation of Gun Cotton.

The original inventor, C. F. Shoenbein, having recently procured letters patent of the United States, we are enabled to lay before our readers, the process of preparing the same, as practiced by him, which is as follows :

1. Clean cotton is immersed in a mixture, consisting of nitric acid of 1.5 specific gravity and sulphuric acid of 1.85 specific gravity, in the proportion of one of nitric to two parts of sulphuric acid, and at the ordinary temperature.

2. Into a mixture of the acids of the last named description clean cotton is plunged in such a manner as to be entirely covered and impregnated by the said acid mixture. Care must be taken that the temperature of said acid mixture must not be above 50 or 60° Fah.

3. The cotton, after having remained an hour or two, more or less, in contact with the acid mixture, must be subject to pressure in order to remove as much as possible from the cotton the acid particles. That being done, the pressed cotton is to be washed until the acid is entirely removed. That operation being finished the prepared cotton is to be dried in moderately heated rooms. Before using the dry cotton it is important to card it.

4. Cotton wool acquires also a high inflamability and explosive power by exposing that material, at the common temperature, to the action of pure nitric acid of the greatest specific gravity that acid can be prepared. This way of rendering the cotton inflamable, appears to be less easy and economical than the method above described. But the use of this cotton wool, as prepared, is claimed as part of the discovery.

5. For many purposes it is good to impregnate the explosive cotton with some nitrate of potash. This preparation imparts to the cotton the property of disengaging a more intense light than the pure prepared cotton does, and the use of nitrate potassa, or other known chemical substitutes, is claimed in combination with the acid treatment.

The inventor claims the application of this or similar process, to other fibrous substances analagous to that specified.

Improvement in the Telegraph.

It has been currently reported for 2 or 3 weeks, that the Buffalo Telegraph Company, has invented a process of printing distinct letters at distant stations, by each touch of the machine ; thus facilitating the communication at least four-fold. We have been waiting to obtain some intelligence on the principles of the process, but are led to the conclusion that the report may have proceeded from the mere conjecture that such a thing *might* be done, but without any matured plan. Therefore the "coast is clear" for our correspondent, who wrote on the subject, to introduce his own projected improvement.

Manufacture of Steel.

A patent has been secured both in the United States and England, for an improved mode of manufacturing cast steel, the principle of which consists in decarbonating pig iron to the degreee required to form steel. This is effected by mixing a portion of malleable iron with the pig iron as it is drawn from the cupola, and blending the two together. The compound is afterwards cast into moulds prepared for the purpose. The United States patent was granted to Josiah M. Heath, Oct. 23d, 1846.

Manufacture of Gas.

Mr. George Michels has invented an improved mode of manufacturing gas for the purpose of lighting or heating. He employs a closed furnace combined with a gasometer, and forces several jets of steam and air upon the fuel in combustion, which is said to facilitate production, and at the same time improve the quality of the gas. The gas is further improved by being passed through oil of turpentine (spirits of turpentine,) or other olifient fluid. Patented Oct. 3, 1846

Improvement in Saw Mills.

This improvement consists in the mode of feeding, which is done by substituting a plain wheel for the ordinary rag wheel, and adjusting the hands laterally in such a manner as to act by a bite on the wheel, which being independent of ratch-teeth, ensures greater precision and regularity in giving feed to the saw. We can see no difficulty, however, in effecting this by a longitudinal as well as by a lateral movement of the hand. Patented Oct. 21st, by Nathan Compton.

Improvement in Steam Engines.

This engine has a cylindrical piston of sufficient length to work through a stuffing box at one end of the steam eylinder, which is the only packing required. The connecting rod is connected to the piston direct, without any piston rod, which saves the occupation of space, though it is evident that the steam can operate on the piston in one direction only.—Invented by Nathan N. Barlow : patented Oct. 21st, 1846.

Jollies' Improved Music Stand.

The representation here presented can hardly be said to do justice to the subject of this notice. The stand is adjustable with regard to its height, being ordinarily about four feet.—The vertical centre post consists of a polished brass tube, to which the legs are attached by hinge joints at the top, and connected at the bottom by three pairs of horizontal brass bars, the centreward ends of which, are connected to a short tube, which occasionally slides up on the centre post so as to allow the three legs to be closed up to a very compact position.—The staff on which the ornamented head is mounted, is also a brass tube inserted within the centre post, and may be elevated or depressed at pleasure being secured in any required position by a side screw. At each front corner of the base of the figure, is a vertical stud or book-holder, which rises from the end of a horizontal pivot, and is counterpoised by a bulb below, so as to keep it ordinarily upright, but allow it to move laterally as occasion requires. A lamp-holder or candlestick, which in the cut, is represented in front below the harp, is supported by jointed bars so as to be adjusted to suit convenience. This invention is highly ornamental, and is convenient to a reader as well as a music performer. They are for sale by S. C. Jollie, 413 Broadway.

The following are claims of inventors to new inventions recently patented, but of which we can give no description.

BY MOSES POND.

Oct. 29th, 1846.

Improvement in Cooking Ranges.

Claim : the combination of the additional boiling chambers with the front boilers and elevated oven of cooking ranges, whereby I am enabled to increase the capacity of cooking ranges ; and I also claim, in combination therewith, the additional side flues and dampers, by which the products of combustion can be made to circulate around the front boilers before passing to the additional boilers, thus affording the ready means of regulating the heat of the front boilers.

BY JOHN SCRIBER.

Oct. 29th, 1846.

Improvement in Piano Fortes.

Claim : the construction and arrangement of the cast iron ribbed plate, having an adjustable screw for extending it, in combination with a bar and set screw, for giving the proper tension to the strings; also, attaching the strings to the turning pins below a concave wrest plank ; also, the manner of tuning the piano by drawing the strings out of a straight line and into the cavity in the under side of the wrest plank ; also, the combination of the key lever and damper lever ; likewise, making the sounding board in waving or serpentine lines.

BY BENJAMIN G. MARTIN.

Oct. 29th, 1846.

Improvement in Tailors Measures.

Claim : a brass plate graduated with slides, clamps and graduated straps, that will enable me, with the aid of a tape, to take measures for garments, and determine the commanding points with more accuracy than any with which I am acquainted

BY HENRY W. SMITH.

Oct. 29th 1846.

Improvement in Seed Planters.

Claim first : the employment of a cylinder for seeding, divided into two parts, and directly attached to the wheels ; also, elevating the teeth ; and lastly, guaging the quantity of grain by means of the adjustable concave and wedges.

BY LIVINGSTON, ROGGEN & ADAMS.

Nov. 24th, 1846.

Improvement in Fastening Latches.

What we claim is combining the lever excentric with the upper screw of the keeper of the latch.

BY THOMAS J. SLOAN.

Nov. 24th, 1846

Improvement in the machinery for cutting the threads of pointed screws.

What I claim is the retarding and accelerating the motion of the alternate cutters in making pointed screws. I also claim the employment of a series of cutters acting alternately on the blank to cut and finish the head of the screw, all placed on the same side of the axes of the screw blank.

BY HOLMES & WEST.

Nov. 24th, 1846.

Improvement in Harpoons.

What we claim is the construction of the the fluke or barb of the harpoon in two parts, in such manner that when it is made to enter a whale or other object of attack, one part, being moveable, may turn, and thereby diminish the chance of its withdrawing, and the making of the handle or shank of several wires or rods intstead of one solid piece.

BY PAYSON, BURCH & DAVIS.

Nov. 24th, 1846.

Improvement in Cooking Stove.

What we claim is the construction and arrangement of the flues, in combination with two ovens, so that a large portion of both ovens shall be surrounded by the flue.

BY BUCKLEY & MORTON.

Nov. 28th, 1846.

Improvement in circular Shears.

What we claim is the making the main bow of the form described, in combination with the half bow, which carries the shafts or spindles of the circular shears ; thereby causing the shafts or spindles of the circular shears to be nearly in a plane with the axis or the revolution, and allowing said circular shears to be moved in or out to any required distance without interfering with the adjustment to each other. The said half bow when affixed in place, constituting a part of the main bow or frame and the space between the cutter shafts allowing of the free passage between them of the plate that is being cut, thereby admitting of the cutting of any number of circles from the same plate, without its being first necessary to divide said plate into separate parts.

BY ADOLPH F. AHRENS.

Nov. 28th, 1846.

Improvement in Trusses.

What I claim is the combination of the pad with the body spring of a truss, so that the pad can be conveniently adjusted into its position and retain its universal freedom of action, by the means of the double nut and screw.

BY PETER H. WATSON.

Dec. 3d, 1846.

Improvement in cutting Screws.

What I claim is the combination of the right and left screw and sliding frame, with the dies for the purpose of centering, feeding, making and smoothing the bolt while the screw is being cut upon it by the chaser.

BY PHILIP ESTES.

Dec. 3d, 1846.

Improvement in machinery for chamfering, crozing and howeling Casks..

What I claim is the attaching the howeling crozing and chamfering cutters to the disk, in such manner as to give them an adjustable and an elastic outward bearing against the inner sides of the ends of the hooped staves of a barrel or cask by means of stocks, sliding plates, radial slots, springs, set screws, collar, connecting rod and lever combined.

BY JAMES RORABAUGH.

Dec. 3d, 1846.

Improvement in Side Hill Plough.

I claim the shape and use of the hook in combination with the conical mould board, for the purpose of keeping the mould board in its position and at the same time to serve as a guide in the motion of the mould board when thrown from one side to the other of the plough.

BY SAMUEL & GEORGE J. CONRAD.

Dec. 3d, 1846.

Improvement in Cooking Stove.

We claim the combined mode of locking the back plate. Also the arrangement of the dampers in combination with the flues.

BY CHARLES RANDALL.

Dec. 3d, 1846.

Improvement in Harpoons.

What I claim is the attachment of the moveable fluke behind the stationary flukes resting against its point on the outer end and resting against the shoulder in the shank thus supporting the inner end without depending on the rivet, which is liable to be weakened by rust.

BY MELCHIOR BRETZGER.

Dec. 5th, 1846.

Improvement in Looms for weaving Wire Gauze.

I claim the particular mode of making the size of the meshes equal by the combination formed by connecting. 1. The contrivance for regulating the revolution of the cylinder by means of shortening or lengthening the cord which is attached to a lever and to the cord at a point.

2. The similar contrivance for the same end by means of another cord also attached to the lever (on the cross-bar) and further by means of a spiral spring and the cord on the back end of said lever and,

3. The contrivance for making by means of the lever the revolution of one cylinder correspond to that of another cylinder (whenever the chain is on the said cylinders and in the act of being woven) thereby moving the web with every movement of said cylinders a distance equal to the size of the meshes. And 4. The contrivance for regulating the descent of the sley so as to reach down uniformly to the same distance. All of which contrivances thus combined and regulated effect the object of making the meshes of an equal size.

II. The mode of constructing and working the gear —

The upper edge of said Gear pressing back the front division of the chain, and the lower edge by its loops drawing the back division of the chain through and in front of the former, thus crossing the chain by one pull with the foot in treadle 4 ; the act of recrossing being accomplished by merely letting go of the said treadle (after the just mentioned pull) whereby the two divisions drop into their former position and, of course, recross, by which contrivance the necessity of a second gear, required in other looms, is obviated, the operation of crossing the chain is made similar and accomplished with less labor.

Royal Presents.

Queen Victoria seems disposed to encourage the little ones of Brother Jonathan's family, to present her with speeimens of their proficiency and skill. About a year since we examined some nicely finished flour barrels. *well-filled*, which were prepared for the purpose, and subsequently presented to the Queen They were prepared and presented by a shrewd miller of LeRoy, who received in return, in addition to a present of about $3000, an order for 3000 barrels more of the same sort.

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NEW YORK, DECEMBER 12, 1846.

Scientific Ignorance.

Having in common with many other inventors, suffered serious disadvantages in business, by the gross ignorance of the laws and principles of mechanical science which prevails in those who carry the purses of the world, and on whose patronage inventors are in some measure dependant, we have frequently expressed surprise as well as regret at the prevalence of such ignorance on a subject so vitally important to the prosperity of this country. We have witnessed a multitude of instances in which the wealthy professional men as well as merchants and tradesmen, who were otherwise well educated and well informed, and who had the advantage of much practical experience in business as well as education, but who nevertheless would not understand nor be induced to comprehend, even the most palpable and self-evident principles of mechanical science, motion, impulse, resistance, &c. Even at the early age of eight or ten years, and before we had seen a book on the subject, we remember having experienced regret and vexation because others could not understand or comprehend the why and wherefore of certain movements of miniature mill-work; and for several years past, we have had constantly before the public, plans of immense importance to the public,—and by which the honor and prosperity of the commonwealth of the United States, as well as the interest of individuals interested would be not only eventually, but immediately advanced;—but yet, although no person has shown nor can show the least philosophical argument against the theory or feasibility of the plans,—although there are not half the apparent grounds for argument against the theory, that there was against Fitch's project of propelling vessels by steam, and that of Evans' for constructing railroads, and propelling *wagons* thereon by steam,—yet these inventions are suffered to lie dormant, because of the prevalence of this "scientific ignorance" of which we complain, among those who have the ready means of putting them into practical operation.

What has led to these remarks at this time, (and which also explains to us in some measure, the cause of prevailing error) is the presence of a *book*—a book which has for some time been very popular in schools and elsewhere, purporting to illustrate the true principles of natural philosophy, but which abounds in gross errors on the subject of mechanical science. The author is a popular professor of Natural Philosophy in one of our most popular institutions; and this is not the first nor only instance in which we have discovered palpable ignorance on this subject, in those on whom the public depend for scientific instruction. This book we have not before examined; but having opened it somewhat casually in two or three different places, and finding important errors in each, we were brought at once to a question of duty and propriety, in the premises; shall we pass over such misguidance in silence, in consideration of the popular standing of the author? or shall we hazard the consequences of collision, by exposing these errors, and thus, as far as practicable, counteract such deleterious influence on the state of public intelligence? We have no doubt with regard to the decision our readers would make on the subject, and shall accordingly present and correct some of those scientific errors with illustrations in our next number.

A Dead Letter.

A cheese was lately sent from Cincinnati to Washington by mail intended as a present to the Post Master General: but the postage amounting to $120. he declined receiving it, and it has been sent to the dead letter office.—It is not every cheese that can be called a *dead* letter.

Mechanics' Papers.

It is remarkable that there has never been a paper in the United States, devoted to the interest of mechanics, which has succeeded so well as to continue and become popular and permanent. When we commenced the publication of the "N. Y. Mechanic," in 1840, there was no paper published that purported to be a mechanics' paper. The "Mechanic" succeeded wonderfully, and in less than a year it had reached a circulation of six thousand and upwards. But during this time four other papers, purporting to be devoted to the interest of mechanics, had been started in different cities; one at Albany, one at Hartford, Ct. one at Cincinnati, O. and one at Boston.

That at Albany, the "New-York *State* Mehanic," was published ostensibly in opposition to us, because we would not sell ourselves to a faction: but none of these was continued over a year. About the middle of the second year, having occasion to attend to other business, we sold out to a gentleman who thought he could manage the paper much better than we had done. Unluckily, however, his subscribers did not think so and consequently the paper was discontinued. For two or three years, it was a common remark, especially by the newspaper agents and dealers, that there were frequent enquiries for a mechanics' paper, but that nothing of the kind was published, and we were solicited to publish another paper; and in complianee we commenced the "Scientific American" and obtained a circulation of 5000 copies in a few months. But what we have now to remark as very curious, is that five different papers, purporting to be "mechanics' papers," have been started since the commencement of this. If the publishers of any of these papers will publish original scientific essays, on instruction in the various arts, and trades, or original notices and descriptions of new inventions, so that we may have a chance to learn something from them, we shall rejoice in their fellowship, and aim to advance their interests. But if on the other hand, they present nothing scientific or instructive but from superannuated or other publications, it will be difficult to see what peculiar advantages are to be derived by mechanics from these more than from other papers. We shall close these remarks by the following special notices:

Mechanics' Journal.

We have received the first number of a paper under this title, and in quarto form, published at Albany, by Messrs. Munsel and Macfarlane: (Mr. Munsel formerly published the "New-York State Mechanic.) This paper purports to be the organ of the order of "Mechanics' Mutual Protection;" the publishers having purchased the interest of Mr. Tanner who has been publishing the "Mechanics' Mirror" which is discontinued. The number before us contains a variety of interesting articles, among which are several ostensibly original. This paper claims to be "the only paper in this *state* specially devoted to our (mechanics') interest." Terms, two dollars per annum.

Mechanics' Advocate.

We have been favored with the first number of a new and neatly printed paper under this title, published at Albany by Mr. John Tanner, (formerly publisher of the "Mechanics Mirror," which has been discontinued.) This paper is published in quarto form, and purports to be the organ of the order of M. M. P. U. S.;—United States Mechanics Mutual Protection. The first number contains a reasonable share of original and well written miscellaneous articles, and well selected extracts. The price of this paper is one dollar a year.

Interesting to Inventors.

As there is at present much diversity of opinion, and consequently much uncertainty in the minds of inventors concerning certain rights and privileges, we think the insertion of the following extract from the report of the case of Hovey vs. Henry will be interesting to that class of readers. It was an action on the case brought by William Hovey of Worcester, against Erastus Henry of Woodstock, Ct., for an infringement of the Plaintiff's patent for an improvement in the "Straw Cutter."

The arguments in the case were not finished till after 10 o'clock in the evening of Tuesday Nov. 11th. The next morning at half past 8 o'clock, Mr. Justice Woodbury summed up to the jury with great clearness and ability, on all the questions of law aud fact in the case. He stated that the claim of the plaintiff was for a new combination, and that, in order to support this, the combination must differ substantially and materially from former combinations. The burthen of proof was on the defendant to show that the combination was not new; to do this, it was not sufficient to show that each part or element of the combination had been known and used before, but that all parts had been known and used in th present combination; and it was not a new invention, if all the parts in a combination had been applied to a different object before, and they were now only applied to a new object. With regard to the defence that the plaintiff had put his invention on sale more than two years prior to an application for a patent, here the burthen was on the defendant. This was in the nature of a statute of limitations, and it was for the defendant to make it out to the satisfaction of the jury that there had been such a sale; and he must do this in a manner that would justify the jury in taking away the property of the plaintiff. An inventor holds a property in his invention by as good a title as the farmer holds his farm and flock. With regard to the abandonment there must be evidence of a distinct character showing such an intention.

The plaintiff did not ask for vindictive damages, but merely such as shoula establish his right. Verdict for plaintiff, and damages assessed at $350.

We are all Producers.

Some philosophers have employed the distinctive appellations of productive and non-productive industry to characterize what they consider two distinct species of it. But it is a fallacious distinction. All kinds of pursuits are productive, even *stealing*. The more thieves there are in the world, the higher wages honest men obtain. Were all men virtuous, merit would be a drug, and die poor, as villiany does nine times in ten. Now, if even larceny is productive to those who eschew evil—of course all other employments must be still more so. The maid-of-all-work, who is busy all day with making nothing that a statistical philosopher can enumerate in his list of manufactures or agricultural productions, is not on that account, to be accounted a non-producer. She produces domestic comfort, an invisible feeling of pleasure, which we all understand and appreciate, but which we can neither weigh nor measure. The carpenter can show his work, and carry it about, and measure it; and it can be preserved as a memorial of his skill for many generations; but the musician's work dies as soon as it is performed, and no trace or vestige remains of the exquisite tones with which he thrills the senses of his delighted audience. Yet we should not call the industry of the musician non-productive; it produces pleasure. And what is the end contemplated by any species of industry—but pleasure?

The fact is, that industry divides itself, like everything else in human nature, into an external and internal—a material and spiritual. A flower has a visible form and oduor, but it has an invisible odour and virtue; and so has industry. There is an industry which can show its work, and there is an industry which can only make its work be felt; but the one is quite as real as the other—and quite as productive, provided society require it.

The mechanic may think that the soldier and policeman are very idle fellows—non-producers. But he is mistaken. They produce that political tranquility which enables the mechanic to prosecute his work without fear of disturbance, and which secures to him the reward of his labor. Their productions are felt if they are not seen.

Every species of industry that is considered worthy of pay or reward is productive in some sense or other; and even that which is not paid, such as the sports of children or adults, is productive of health and enjoyment; and is therefore, quite as valuable as any other species of industry.—*Alb Knick.*

Between forty and fifty illegal rumsellers plead guilty, at the late term of the Circuit Court at Rochester, and were each fined $5.

The City of Boston.

Any man who visits this centre of eastern enterprise, will be astonished at its growth.—The last three years, especially, have made it almost to burst with swelling greatness. Such a people, so intelligent, enterprising and industrious, where everybody works, will be rich, and will accomplish whatever they undertake. But Boston has been more than successful. Her railroads and other plans of improvemement have surpassed the expectations of their projectors, in their favorable results. The number of her merchants has immensely increased, while everybody does a much larger business than formerly, especially among the dry goods dealers. He was a respectable jobber a few years ago, who sold $100,000 worth of goods; but now 300 to $500,000 is a common thing. The stores of the dry goods jobbers are built like palaces, with an exuberance of cost, which is almost in bad taste. The renowned peninsula is all built over snug and tight, and thousands of merchants live out of town, conveyed by omnibuses and railroad cars. Hundred thousand dollar men are plenty now all about, and millionaires are to be found here and there. The Bostonians attribute their very great prosperity to their railroads, especially that to Albany. This road has opened up to them the western trade more fully than they had it before, and has made Boston more accessible to the West, at some seasons of the year, than New York. Boston deserves whatever prosperity she gains from this noble enterprise. It was not built by her capitalists and retired men. They never do these things. The men in active business, who had less personal interest in it, but more enterprise and public spirit, did it, as they must ever do these things. They could do it; for in Boston there is a concentration of the public mind, which brings out and directs its mighty force to great achievements. We have no jealousy of Boston's prosperity, and no fear that it is to undermine that of New York. But we should be glad to see New York acting with as much good sense and concentrated enterprise. Our want of concentration of sentiment—anything like a New York spirit—is perhaps the result, in a great measure, of our prosperity. Yet prosperity so treated is enfeebling and in the end may cost more than it is worth. Nature had made New York great; but art sometimes overcomes nature. Nothing is more plain than that we ought to have a railroad to Albany, and ought to have had one before Boston built hers. It is a reproach to our sagacity, and to the sagacity of our noble city, that we have it not. In the effort to do it we were singularly unfortunate. In Boston there never could have been the mismanagement which it took us so long to overcome in the Erie road, and which we have yet to overcome in that to Albany.—*Journal of Commerce.*

The new Planet.

It is ascertained that Leverrier's new planet is two hundred and thirty times as large as the earth, being the largeet planet of the system. Its position is exactly that assigned to him by his calculations.

The Scriptures in France.

It is said that thirty thousand copies of the sacred Scriptures have been sold by the colporteurs of France during the last three months.

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Those subscribing to the Scientific American will be furnished, if desired, with all the back numbers of the present volume. Bound together at the end of the year, they will form a handsome and valuable work.

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CHEMISTRY.

Continued from No. 11.

ACIDS.

Acids are a most important class of chemical compounds, and have the following characteristic properties:—The greater number of them have a sour taste, and are very corrosive. With few exceptions, they change vegetable blues to red, they are mostly soluble in water, and they unite with the alkalies, earths, and metallic oxides, forming what are called salts—an order of bodies of the highest importance in the arts, manufactures, &c. Some acids are destitute of a sour taste, but their affinity for the three classes of bodies above named is a universal characteristic. Acids are all compound bodies, and some of them have more than one basis or radical. There are a number of acidifying principles, but oxygen (which shall be immediately described) is the most extensive one. The acid is distinguished by the name of its base, and its degree of oxidation, that is the quantity of oxygen it contains, by the termination of that name in *ous*, or *ic*, or the prefix *hypo* (under.) The highest degree of oxygenation is marked by the termination *ic*, as nitric acid, and salt that is formed from it, is made to terminate in *ate ;* the next by that of *ous*, as nitrous acid, and the salt that is formed from it is made to terminate in *ite;* and the lowest by *hypo*, as the hyponitrous acid. Sometimes oxygen combines in a greater quantity with the acidifiable radicals, in which case the product is said to be superoxygenated. All acids are not susceptible of these various degrees of oxygenation, some being limited to only one. There are a considerable number of acids, and the number is continually increasing by the discovery of new ones; but of the most important there are few, and these we shall notice as we come to treat of their bases.

SALTS.

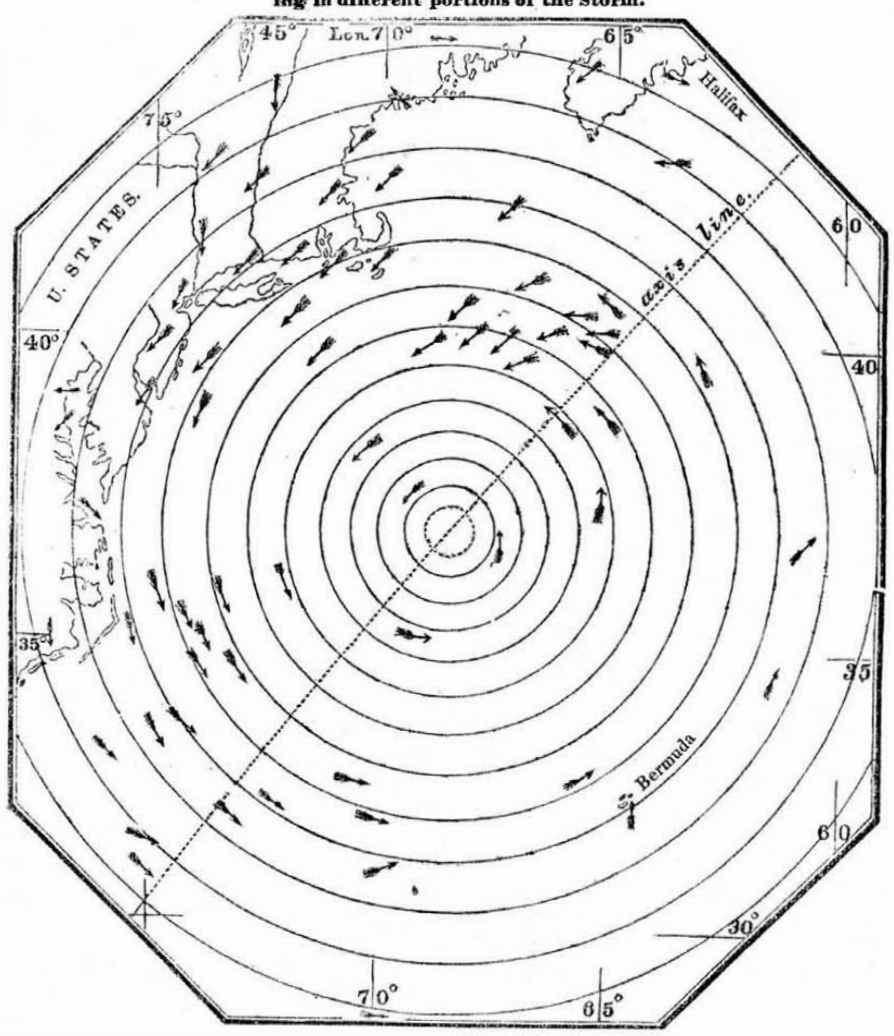
This term has been usually employed to denote a compound, in definite proportions, of acid matter with an alkali, earth, or metallic oxide. When the proportions of the constituents are so adjusted that the resulting substance does not affect the color of infusion of litmus or red cabbage, it is then called a neutral salt, because the peculiar powers of both bodies are suspended and concealed; they are rendered neutral and inactive. When bodies combine in such a way as to satisfy their mutual affinities, they are said to *saturate* each other. When the predominance of acid is evinced by the red of these infusions, the salt is said to be acidulous, and the prefix *super* or *bi*, is used to indicate the excess of acid. If, on the contrary, the acid matter is deficient, or short of the quantity necessary for neutralizing the alkalinity of the base, the salt is then said to be with excess of base, and the prefix *sub* is attached to its name. These must be understood however, only as general rules. There are exceptions to be found in the case of some salts, as the compounds formed by an acid and and an alkali, an earth, or a metallic oxide, are denominated.

SPECIFIC GRAVITY.

Specific Gravity is the relative gravity or weight of any body or substance, compared with that of some other body which has been fixed upon as a standard. By universal consent, pure distilled water has been assumed as a standard ; and it fortunately happens that a cubic foot of pure water weighs exactly 1000 ounces avoirdupois Water is indicated by unity—thus 1. When, therefore, it is expressed that any body has a specific gravity of 2, then, bulk for bulk, it is just twice the weight of water. If there be more figures than one, and there be a dot or point between them—thus, 2.5—the unit is here divided into ten parts, and the body is twice and five-tenth times, or two and a half times heavier than water. If two figures occur—thus, 10.40—the unit is supposed to be divided into a hundred parts, and the body is ten and forty hundredth part times heavier than water. If there are three figures, the unit is supposed to be divided into a thousand parts ; if four, into ten thousand parts, and so on; the number and value of the figures always indicating the exact specific gravity of the body according to the above principle. Common air is sometimes taken as a standard with which to compare gases, but all the solids and fluids are estimated with regard to water.

A MAP

Showing the position of the Great Hurricane of October, 1846, at 9 P. M. of the 6th. With the direction of Wind as then prevailing in different portions of the Storm.



The Autumnal Gales.

The severity of the gales which have occurred the present autumn has attracted the attention of all who are interested in the commerce of the ocean. The heat which prevailed in the Atlantic states during the first week in September was dissipated by a storm which swept along our coast at the end of that period, or rather by two gales, one from the Northern islands of the West Indies, and the other from the Gulf of Mexico, which, about the latitude of 30 deg., nearly coincided in their progress, and caused serious losses in our navigation.

About the 12th of September another gale appeared at Barbadoes and the windward islands, moving with a North-westerly progression toward longitude 70 deg., near which meridian it recurved gradually to a North-easterly progression,—its right limb touching Bermuda on the 17th and 18th, sweeping over the island and banks of Newfoundland on the 19th and 20th, causing great destruction among the shipping which fell in its path. From the reports of the Great Western and our numerous packet ships we find that this hurricane was of great extent and violence, and was far more destructive in the higher than the lower latitudes. We have abundant means for tracing its progress as far Eastward as lon. 29 deg., and there is little doubt of its farther progress to the Eastern shores of the Atlantic ocean.

Late in September another gale from the Gulf of Mexico, appeared on our coast. About the 5th of October still another severe storm passed near the coast, proceeding towards the banks of Newfoundland.

The storm which visited New-York on the 13th of October will long be remembered on account of its destructive violence at Key West on the 11th, and also at Havana. The earliest report which I find of this storm is that of the brig Cora, in the Caribbean sea, off Maracaibo, on the 5th of October ; and the identity of the Cora's storm with that of Savannah and Charleston on the 12th, and New-York on the 13th, has appeared highly probable, even before the disastrous accounts were received from Key West and Havana, occasioning apprehensions which have since been realized. The appropriate and timely communication in the Mobile Herald, from Captain Engle of the U. S. ship Princeton, now confirms and establishes the supposed identity and route of the storm ; the Princeton at that period being in the Caribbean sea, running toward Pensacola. There is still room to apprehend disastrous accounts from Jamaica, particularly from the South side, and West end, although the central and most violent portion of the hurricane appears likely to have passed to the Southward and Westward of Jamaica in pursuing its course towards the Western portion of Cuba.

It is important for navigators to notice that these several gales *were great whirlwind storms*, moving forward on great curves of progression toward the higher latitudes, while revolving rapidly round their own centres from right to left, in accordance with the known law of storms in the northern hemisphere. In this common and essential feature they have resembled the great Cuba hurricane of October, 1844, which passed near to our coast in its destructive progress. An examination of the account of this last named storm as published in the American Journal of Science for May, September and November of the present year, will show demonstratively its rotary character ; which is also common to all or great storms, and must be clearly understood by navigators in order to secure the adoption of the best means of safety in these gales.

The accounts of this storm in the Journal of Science, are accompanied by charts on which are shown the daily progress and advancing positions of the storm for three successive days, at intervals of three hours on each day, with the direction of wind prevailing at these several times in different parts of the storm, as derived from the various observations that are there given. The diagram is one example of these plotted observations, omitting the references, and shows the position of the storm at 9 o'clock P. M., of October 6th, the evening on which it passed New York, with arrows indicating the direction of wind then prevailing in different portions of the storm ; which was about one thousand miles in diameter, and was then moving toward the North-east at the extraordinary rate of more than 40 miles an hour.

By means of a due examination of the above diagram, and of the charts and accounts to which I have referred, the changes of wind which must take place under different portions of the storm, as it advances in its track, may clearly be known, as well as the advantage or disadvantage which may be likely to result from any change in the course or position of a vessel while under the storm.

It appears from a communication in the United States Gazette, from an officer on board the U. S. Brig Perry, that in the late Key West hurricane, *in scudding before the wind* between Cuba and Florida, this vessel run the greater part of a complete circuit in the direction from right to left, before being finally run on shore on the Florida Reef.

The commercial world is greatly indebted to Col. Reed, R. E., now appointed Governor of Barbadoes, and also to Mr. Piddington, of Calcutta, and Surgeon Thom, of the British Army, formerly at Mauritius, for their successful labors in establishing the universality of the natural law which governs the tempests both in the Northern and Southern hemispheres, as well as in pointing out to mariners the most available means of escaping these dangers or for encountering the same successfully. Mr. Lee, editor of the Bermuda Gazette, has also aided much in extending this knowledge among nautical men.

It may well be doubted if our navigators can longer neglect or disregard the known law of storms without seriously jeopording both their professional credit and their highest usefulness. In view of the advantages which may result to navigation, it is desirable that ship-masters should report their latitude and longitude in any gale which they may encounter, and also the direction and shifting of its winds. Much practical benefit may be derived from such reports. W. C. R.

New-York, November, 1846.

Machine for measuring velocity of Rail-Way Trains.

Mr. M. Ricardo laid before the late meeting of the British Association a model of his very beautiful machine for registering the velocity of railway trains. The object of it is to furnish the railway companies with a record of the work done By this means they would be often enabled, in cases of any accident, to assign correctly the nature and cause of such accident, and so prevent its recurrence. The machine is closed up under the seat of a railway carriage and when placed there it marks on a strip of paper the speed of the train, the time of its passing every half mile, and the length of every stoppage at a station. It is in short, a mechanical inspector of trains. He described the apparatus and stated that it had gone some thousand miles without accident.

About fifty persons were killed or seriously injured by the collision of two boats, recently, on the Mississippi.

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For the Scientific American.

The Saviour as a Mechanic.

The Great Architect of the Earth and the Heavens made nothing in vain. He deemed it important to give attention to the smallest insect that floats in the air as well as to the largest sidereal world. The fall of a sparrow does not escape his notice. Throughout his works of creation and providence he has shown a design indicative of his infinite wisdom and boundless benevolence. To the inhabitants of this world nothing is of higher concern than the provision made for the progress and redemption of the human race. If the plan of salvation by Jesus Christ is the most God-like of all the revelations yet made to man, certainly every act and every exhibition of the character of the Redeemer are full of meaning and most weighty of consequences.

None but infinite wisdom would have conceived the importance of having the Saviour of men born in a manger, carried for the safety of his life into foreign lands, learn the trade of a carpenter, collect his followers from the humble and useful callings of life, devote his time and energies to preaching and to healing the sick, driven from village and city without where to lay his head, and finally suffer and die on the ignominious cross. His whole life was a moral lesson, and yet it has ever been repugnant and a reproof to the false notions of mankind. He did not come in the style the Jews expected or wished. "Is not this the carpenter, the son of Mary, the brother of James, and Joses, and of Juda and Simon, and are not his sisters here with us? And they were offended at him?"—Mark vi. 3.

The history of the world shows that mankind have exhibited and esteemed many traits of character the reverse of those that infinite wisdom and goodness set forth in the incarnate life of the Son of God. The profession of arms for instance, has ever been the pride and glory of individuals and nations; and yet the life and doctrines of the Prince of Peace totally condemned it as an honorable and desirable calling. All manual labor both in the field and in the workshop has always been regarded as less respectable than many other pursuits, however doubtful of utility or positive of evil; and yet the Saviour was a working Mechanic. The surface of the globe has been drenched with the blood and whitened with the bones of the slain in battle, and conquered nations have been enslaved, because youth were taught that military fame was greater and more pleasing to heaven than excellence in the arts of peace. Even now he who holds his fellow creatures in bondage and he who wholesales liquid poisons think themselves superior to the carpenters that build their honses. Education in all ages has extended itself to trade, medicine, law, theology, the army and the navy, before it has to the field and the workshop. Like rural taste, the most natural and refined, these latter pursuits were the last to be appreciated and cultivated.

Suppose the Messiah had been a Doctor of Laws, a lawyer, there would have been an apostolical succession in the legal profession, delaying, for many centuries, our prospective emancipation from the tyranny of perverted law. The birth, apprenticeship, acts, manners, habits and precepts of Christ were all condemnatory of the false views that have characterized all nations. His doctrines went forth to break down castes and distinctions in society that are hostile, and to exalt all those favorable to universal freedom and improvement. Had the Saviour been what the great, the fashionable and the elite of this world would have marked out, the day of millenium, under the supposition that means of the same efficiency were used, would have been put back many thousand years. The freedom of speech, of the press, the right of all to pursue happiness would have existed only as ideal and in the aspiration of the soul. The very fact that Jesus Christ was a mechanic has served to prevent castes in the christian world as oppressive as those of India. And this fact is destined to revolutionize mankind in reference to what is really respectable and honorable.—It is destined to teach them that manual labor is indispensable for the greatest mental, moral and physical developement—that beauty and excellence cannot exist in their highest degree without it. God, we are told, labored six days in making this little world. It is probable he has worked for millions of years, and intends to work for all future millions. Jesus spent a large portion of his life in adapting to useful purposes the materials his Father had furnished in the forest. And will poor fallen and corrupt man pronounce that as not respectable which God and his Son have markedly approved? Will an accomplished and Christian lady give her hand to a soldier with epaulettes in preference to a mechanic of equal mental and moral culture? If so, does she think she is following the example of her Lord who knew all things and appreciated them according to their true worth. It is the developement of this spirit that now causes angels to weep over the deadly strife, wrath and blood, between our countrymen and those of a sister republic. Alas! how much the spirit of the world and the fashionable sentimentalism of the day are at variance with the highest interest of mankind and with what is approbated by the Creator. This subject suggests several deductions.

1. In Jesus Christ's following a laborious trade there was a design connected with the greatest welfare of mankind.

2. We may conclude that labor is not only favorable but necessary to the greatest excellence in all that constitutes Man.

3. As we advance towards the golden age mechanical pursuits will become of greater relative importance and respectability.

4. The progress of society depends very greatly on the mental and moral culture of mechanics.

5. The highest state of human happiness cannot be attained while there is so great deficiency in the mental and moral culture of the great mass of mechanics. S. F.

Electricity of Human Bodies.

Editor Scientific American.

In the year 1838, happening to be in Baltimore, I met with an intimate friend of mine, who informed me of some curious experiments he had been making in electricity. Reflecting on the curious phenomenon observable on the friction of the hair of a cat's back, well known to every body, he was induced to try the operation on the human head, when to his gratification and astonishment he discovered that powerful discharges of electricity could in this way be readily obtained, The manner of experimenting is as follows: Let a person be seated in a chair the four legs of which are placed in as many glass tumblers for the purpose of insulation. Then if a horn or wood comb is rapidly drawn through the hair by another person (who must carefully avoid touching the subject of the operation as the electricity would be thus carried off,) sparks may be readily taken from any part of his body by the application of one's finger. I tried the experiment myself at that time, and by means of a Leyden jar obtained twenty five sparks, with which I shocked seven or eight persons formed into a circle. If a metal comb be used, *flashes* of light can be distinctly seen in a dark room, coursing from the hair along the comb to the hand of the operator. What is worthy of notice, as tending to prove that all living organizations throw off electricity continually at every effort of muscular exertion, is the fact that if the insulated individual combs his own hair, no sparks can be obtained. The gentleman who made these observations, also discovered the "electricity of steam," and communicated the fact to me at that time, which was several years before its announcement in England. Yours, &c. T. H.

P. S. Persons unacquainted with the phenomena of electricity who may try the above, experiments, may need to be informed that a *cold* room is the best in which to make them.

Jersy City Nov. 25, 1846,

Mr. Editor.

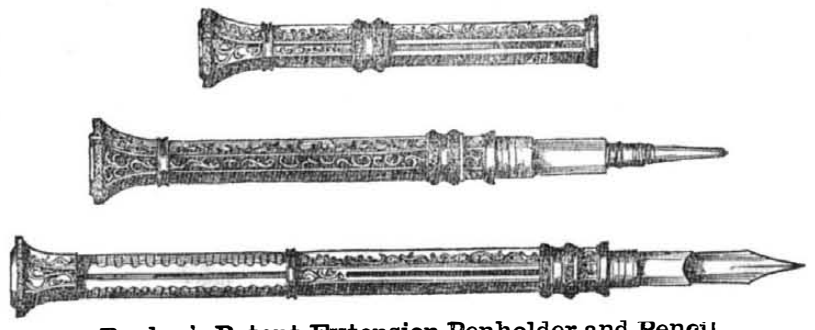
In accidentally looking through white or milky colored glass I perceived that the light from the lamp was of a blood red color. The experiment excited my curiosity, and a variety of suggestions presented themselves to the mind. I was led, among other things, to infer that the red appearance of the sun and moon in smoky weather might be produced by a principle analogous to that here instanced, or that it is likely one and the same effect.

Would you be good enough to explain in your excellent paper the nature of this phenomenon, and oblige yours, M.

There are different kinds of white glass and we are not prepared to say what ingredient produces the effect above described, but it is evident that the glass may contain a transparent red color concealed by an opaque white. For example, if white lead be mixed with common red ink, the red color will disappear, but if a thin coat of this paint be spread over glass it will change the sun's rays to a red color, though it appears white of itself.—Ed.

John Murray.

Any information respecting the whereabouts of this individual will be thankfully received at this office. Said Murray is a Scotchman by birth and is supposed to be in the vicinity of Newburg, N. Y. The public are cautioned against paying any monies to him on our account as he is no longer our agent.



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In the short space of 2 3-4 inches is contained a Pen, Pencil, and a reserve of leads, and by one motion slides either the pen or the pencil out and extends the holder to six inches, which is but little more than half the length, when shut up, of the common pen holder, but when extended is one fourth longer. This article is secured by two patents, and the Manufacturers are now ready to receive orders for them in any quantity, either of Gold or Silver, together with his celebrated ever pointed Gold Pens, which need no proof of their superiority except the increased demand for the last six years, and the numerous attempts at imitation.

A. G. BAGLEY, No. 189 Broadway.
New York, Sept. 1, 1846. o24 tf

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C. HAMMOND, Principal.
Monson, Mass., Nov. 14, 1846. n28

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Superintendant of Elliot Mills.
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SMITH'S CELEBRATED TORPEDO, OR VIBRATING ELECTRO MAGNETIC MACHINE—This instrument differs from those in ordinary use, by having a third connection with the battery, rendering them much more powerful and beneficial. As a curious Electrical Machine, they should be in the possession of every one, while their wonderful efficacy as a medical agent, renders them invaluable. They are used with extraordinary success, for the following maladies.

Rheumatism—Palsy, curvature of the Spine, Chronic Diseases, Tic-doloureaux, Paralysis Tubercula of the brain, heart, liver, spleen, kidneys, sick-headache.

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These machines are perfectly simple and conveniently managed. The whole apparatus is contained in a little box 8 inches long, by 4 wide and deep. They may be easily sent to any part of the United States. To be had at the office of the Scientiffic Americcan, 128 Fulton st, 2nd floor, (Sun building) where they may be seen IN OPERATION, at all times of the day and evening. 2

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Manufacturers of Tin Cylinders for SPINNING FRAMES.

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COPPER SMITH!—The subscriber takes this method of informing the public that he is manufacturing Copper Work of every description. Particular attention is given to making and repairing LOCOMOTIVE tubes. Those at a distance, can have any kind of work made to drawings, and may ascertain costs, &c., by addressing L. R. BAILEY, cor. of West and Franklin sts., N. Y.

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To those desiring Drawings or Specifications, Mr. B. has the pleasure of referring to Gen. Wm. Gibbs McNiel, Civil Engineer, Prof. Renwick, Columbia College, Prof. Morse, Jno. Lee.

Residence, No. 10 Carroll Place; office No. 82 Chambers street. oct. 10 tf

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CURIOUS ARTS

Glass Staining.

Painting on glass properly so called, that is to say, the application of colored enamels to uncolored sheets of glass, was little known to the ancient artists, and it is only in our own day that the progress of chemistry has advanced this art to any degree of perfection.

Painting on uncolored glass was executed in 1800 by Dihl; it consists in tracing the same design on two sheets of plain glass, which are submitted to the action of fire, and then the faces on which the designs are drawn are laid upon one another.

To fix by heat the colors on glass without altering its form, or fusing it, it is necessary to add vitreous matters, which are readily fusible, fluxes, which vary according to the nature of the colors.

Silicate of lead is employed with or without borax, minium and very fine sand are fused together, and different portions of calcined silex and quartz. For instance, take quartz 3 parts, minium 9 parts, borax calcined 1 1-2 parts, or borax calcined 5 parts, quartz 3, minium 1.

The quantity of flux required for each color, so that it may have the required fusibility and clearness is very variable; the necessary proportion is in general three or four parts. All colors are not adapted for the same flux; the purple of gold, the blue of cobalt, require an alkaline flux; the minium injures these substances, while other deep colors are not injured by fluxes into which lead enters.

Some substances require to be vitrified with the flux proper to them, before they can be employed in painting, as the feeble heat to which they are subsequently subject is not sufficient to develop the color properly. The deutoxide of copper, and the yellows, blues and violets, are among these substances. With purple of gold and oxide of iron, on the contrary, great precautions are necessary to prevent the injury of the color by too great heat. The colored enamels when prepared are reduced to powder, and preserved from the action of moisture.

All kinds of glass are not suitable for painting. Excess of alkali is destructive; preference is therefore given to the hardest glass, which contains a great deal of silex, and which does not attract moisture, as the Bohemian glass for instance.

Before applying the colors with the brush they are mixed on a palette with turpentine. When the painting is finished the colors are fixed by heat, an operation which requires great care and experience. Pots of fire clay closed by a cover of the same substance are placed in a support of iron, so that they can be enveloped on all sides by the flames; the method adopted in France for cooling glass is to put it on separate furnaces heated by charcoal. The plates of glass are laid one on another on clay slabs, supported on props of the same material. The heat is judged of by trial pieces, which are introduced with the rest of the glass into the furnace, and are withdrawn with a spatula. When the colors are well vitrified, the plates are put in the annealing oven and gradually cooled. It is necessary that this last operation should be conducted very gradually, to insure the permanence of the colors.

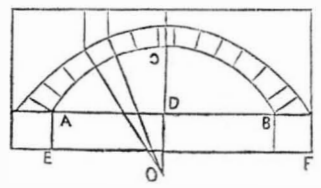
The color communicated to glass by protoxide of copper is, as has been observed, too intense to be employed alone, for it causes the metal to appear opaque of a deep brown. It is necessary, for procuring a transparent red, that the glass should be extremely thin. Consequently, the only means of getting red glass of a proper thickness is by covering plain glass by a thin layer of red. The plated glass has the advantage of allowing the partial removal of the red layer, in order to obtain white figures, or add other colors. The glass of the middle ages shows that this method was adopted by the ancients.

In order, that, when the red and white glass are blown together, they may be well united, and do not separate during cooling, (as happened in some of Engelhardt's experiments,) the metal of both must be the same, or at least analagous. It is best to make the red a little weaker than the white; the latter must not contain any oxydising substance, which would injure the red color.

Great care is required to avoid air bubbles in the glass. The red and white must be ready at the same time, in order to work together well. The beauty of the glass depends also materially on the skill of the workman, for it is easy to understand that the colored glass is always thicker near the orifice of the blowing iron than at a distance. It is on this account that the glass is seldom of a uniform color, except in the middle of the plate; at the extremity of it the red layer is sometimes so thin that all trace of color is lost. Dr. Engelhart has procured several ancient specimens, in which this gradation from a deep to a light color, has been made use of in a very happy manner to produce striking effects.—After a certain degree of practice, the workman is able to obtain a tolerably uniform color.

It is sometimes necessary, when the glass has once been painted and the colors fixed by baking, to add a second coat of painting; and as it is then necessary that the glass should be again subjected to heat, the coloring matter must be rendered so fusible by an additional proportion of flux as to avoid all risk of fusing the colors first painted.

ARCHES.



In describing arches, says Brande, some technical terms are made use of, which it will be convenient to define. The arch itself is formed by the voussoirs, or stones cut into the shape of a truncated wedge, the uppermost of which at C, is called the key stone. The seams, or planes, in which two adjacent voissoirs are united, are called the joints; the solid masonry A E and B F, against which the extremities of the arch abut or rest, are called the abutments; and the line from which the arch springs, the impost. The lower line of the arch stones, A C B, is the intrados or soffit; the upper line the extrados or back. The beginning of the arch is called the spring of the arch; the middle, the crown; the parts between the middle and crown, the haunches. The distance A B between the upper extremities of the piers, or the springing lines, is called the span, and C D is the height of the arch. There is considerable difficulty in determining the form which an arch ought to have in order that its strength may be the greatest possible when it sustains a load in addition to its own weight; in fact, the determination cannot be accurately made unless we know, not only the weight of the materials the arch has to support, but also the manner in which the pressure is connected; that is to say, unless we know the amount and direction of the pressure on every part of the arch. By theory we can demonstrate the form of an arch best adapted for strength, on the supposition that there is no superincumbent pressure.—But it is entirely unnecessary in the actual construction of an arch, to adhere closely to the form determined by the supposition. Indeed, on account of the friction of the materials, and the adhesion of the cement, the form of the arch, within certain limits, is quite immaterial, for the deviation from the form of equilibration must be very considerable before any danger can arise from the slipping of the arch-stones. The Roman arches which have resisted the attacks of time for so many centuries, are generally in the form of a semi circle. For bridges it is better to employ a smaller segment of a circle; frequently the elliptic arch is preferred on account of the beauty of its form.

Wooden Gun Powder.

From sundry recent experiments the fact is established that fine saw-dust or rasped wood, steeped in a mixture of concentrated sulphuric and nitric acids, and afterwards washed and dried, will explode similar to common gunpowder, and if rightly managed, with much greater force. The greatest wonder about it is that the fact had not been discovered earlier.

From the Plowman.

Preservation of Fruits by Carbonic Acid Gas.

It is a fact with with chemists have long been acquainted, but which I believe is not generally known, that carbonic acid gas possesses the property of preserving fruits placed in it, for a considerable length of time, in nearly all its original freshness and flavor. The process is almost too expensive to be employed on a very large scale, and best adapted to the smaller fruits, such as cherries, gooseberries, &c. I have sent you a description of the mode of generating the gas, thinking that it might prove a source of amusement to some of your readers who are fond of such kind of experiments.

The apparatus required is very simple. A common pint glass bottle, with a cork, through which passes tightly a bent pewter tube about one half an inch in diameter and about 12 or 14 inches long, another wide mouthed pint glass bottle with a cork (a ground glass stopper is the best) and a pail or other suitable vessel of water is all that is required. In the bottle with the tube place 2 oz. of the fragments of white marble, and pour over them sufficient muriatic acid to cover them; quickly insert the cork with the tube attached, and dip the end of the tube beneath the surface of the water in the pail. A violent effervescence will immediately take place in the bottle, and numerous small bubbles will issue from the end of the tube and rise through the water. These are bubbles of carbonic acid gas, which may be collected by taking the other bottle and sinking it, mouth upwards, in the pail, so that the atmospheric air will escape, and the water take its place. When the bottle is full of water carefully turn it mouth downwards, and steadily lift it with its mouth still under water, until exactly over the end of the tube, from which the bubbles are issuing. The gas will rise through the water in the bottle, immediately, while the water in the bottle will sink into that contained in the pail. When the bottle is full of gas, carefully insert the stopper, keeping the mouth still under water; when this is done, remove the bottle and place it upright on the table, then take the fruit you wish to preserve, and removing the stopper (the gas will not escape it being heavier than air) drop it in the bottle until full or nearly so, stop it tight and place it in a cool dry place.

The process is easily conducted, and the acid may be purchased at the druggists for a trifling sum. The fruit will keep good for a long time if the gas is not suffered to escape, and will preserve its plumpness in an astonishing degree, and the satisfaction arising from the result will amply pay the slight trouble and expense attending the operation. J. K. M.

Chemical Experiments with Metals.

METALLIC GLASS.

Take a little red lead and expose it to an intense heat in a crucible, and pour it out when melted. The result will be metallic glass, and furnish an example of the vitrification of metals.

PATENT YELLOW.

Mix one ounce of litharge of lead with one drachm of pulverized ammonia, and submit the mixture to a red heat in a clean tobacco-pipe. The increase of temperature will seperate the ammonia in the form of gas, and the muriatic acid will combine with the lead.—When the compound is well melted, pour into a metallic cup and you will have a true muriate of lead of a bright yellow color, the brilliancy of which may be much heightened by grinding it as usual with oil. In this state it forms the color called patent yellow.

The Watch.

The parts of a watch consist of a special steel spring, which is the moving power; the barrel, or brass box for receiving the spring when coiled up; the worm wheel which is turned around by a worm; the fusee, which receives the chain when the watch is wound up; the ratchet wheel at the lower end of the fusee; the great wheel which has forty-eight teeth; the centre wheel which has fifty-four teeth; the third wheel which has forty-eight teeth; the centrate wheel which has forty-eight teeth; and the balance wheel which has fifteen teeth; besides the arbour of the balance wheel called the verge, and the two pallets belonging to this arbour.

Oil of Roses.

The following is a simple though excellent method for obtaining essential oils:—Take any flowers you like, and stratify them with common sea salt, in a clean earthern pot.—When thus filled to the top, cover well and place in a cellar. Forty days afterwards put a crape over the pan and empty the whole to strain the essence from the flowers by pressure. Bottle that essence and expose it four or five weeks in the sun and dew of evening to purify. One single drop of this essence is sufficient to scent one whole quart of water.

A Cheap Fuel.

Mix coal, charcoal or saw-dust, one part, sand of any kind, two parts, clay one part, in any quantity as thought proper. Make the mass up wet into balls of a convenient size, and when the fire is sufficiently strong, place these balls, according to size, a little above the top bar, and they will throw out a heat considerably more intense than common fuel and insure a saving of one half the quantity of coals. A fire thus made up will require no stirring and need no fresh fuel for ten hours.

Safety Letter Box.

A new safety letter box, which seems to combine the two essentials, simplicity and security, has been invented by Mr. Pearce, of St. Pancras lane, city. Letters when deposited in it fall first on one inclined plane and thence on to another slanting in an opposite direction before they reach the bottom, a contrivance which effectually prevents the abstraction of letters from without. The plan has, it appears, been successfully adopted at the Gloucester Post-office.—*London Mech. Mag.*

It is estimated that the wrecks of four-fifths of the vessels lost, are attributable to some incompetency on the part of the masters.

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